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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,537	10/01/2003	Yoshinori Fukuda	040894-5963	5351

9629 7590 08/24/2005

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EXAMINER	
WON, BUMSUK	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,537	FUKUDA, YOSHINORI	
	Examiner	Art Unit	
	Bumsuk Won	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/01/2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/03, 03/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/617,537, filed on 10/01/2003.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the " interface" in claim 8 and claim 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as " amended." If a drawing

figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either " Replacement Sheet" or " New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Organic electroluminescent display having two reflecting portion for reducing intensity reflectance of the external light by an optical interference effect.

Claim Objections

4. Claims 10 and 12 are objected to because of the following informalities: The word " of" in the third lines of claims 10 and 12 should be changed to " or" .

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimoda (US 6,639,250).

Regarding claim 1, Shimoda discloses an organic electroluminescent display comprising: an organic electroluminescent device having a light emitting layer (note

figure 1, item 4) made of an organic material and at least two electrodes (note figure 1, items 3 and 5) sandwiching the light emitting layer (note figure 1, item 4); a front reflecting portion (note figure 1, items 1, 2 and 3) arranged on a side of a viewer with respect to the light emitting layer (note figure 1, item 4); and a rear reflecting portion (note figure 1, items 5, 6 and 7) arranged on a side opposite to the viewer with respect to the light emitting layer (note figure 1, item 4), wherein the optical film thickness of the light emitting layer, intensity reflectance R.sub.1 at the front reflecting portion and intensity reflectance R.sub.2 at the rear reflecting portion are configured so that an intensity reflectance of the external light viewed from the viewer is set to be 10% or less by an optical interference effect (words after " wherein the optical film thickness" does not contribute to the structure of the device).

Regarding claim 2, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the intensity reflectance R1 and the intensity reflectance R2 are configured to be $R1 \leq R2$.

Applicant discloses that the equation for intensity reflectance, R, is as following (equation 7 on page 24).

$$R = \frac{(n_1 - n_2)^2}{(n_1 + n_2)^2}$$

R1 is anywhere between 0.000816 and 0.0074, and R2 is 0.00158, which satisfies R1 ≤ R2, where refractive index of ITO (first electrode) is between 1.8 and 2.05, refractive index of aluminum oxide (second electrode) is 1.57, and refractive index of organic EL layer is 1.7.

Regarding claim 3, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the intensity reflectance R1 and the intensity reflectance R2 are configured to satisfy the following Equation (1).

Equation (1) $$\left(\frac{\sqrt{R_1} - \sqrt{R_2}}{1 - \sqrt{R_1 R_2}}\right)^2 \leq 0.1$$

If R1 is 0.00158, which in the range that is calculated above, and since R2 is 0.00158, the equation (1) can be satisfied.

Regarding claim 4, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the intensity reflectance R1 and the intensity reflectance R2 are configured to be approximately equal.

If R1 is 0.00158, which is in the range that is calculated above, and since R2 is 0.00158, R1 and R2 can be adjusted to be equal.

Regarding claim 5, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the intensity reflectance R2 is configured to be in a range of from 5% to 50%.

Shimoda discloses one of the electrode can be aluminum alloy (Al-Ti, refractive index = 0.961). R2 then can be calculated as 0.077126 or 7.7126%.

Regarding claim 6, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the front reflecting portion (note figure 1, items 1, 2 and 3) comprises a substrate (note figure 1, item 1) and at least one transparent or semi-transparent film (note column 9, lines 10-14, "exhibit light transmissivity", and figure 1, items 2-3).

Regarding claim 7, Shimoda discloses the organic electroluminescent display as claimed in claim 6, wherein the film comprises either one of the two electrodes (note figure 1, item 3).

Regarding claim 8, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the organic electroluminescent device further comprises a substrate (note figure 1, item 1), and wherein the front reflecting portion (note figure 1, items 1, 2 and 3) comprises an interface between either one of the electrodes (note figure 1, item 3) and the substrate (note figure 1, item 1) of the organic electroluminescent device.

Regarding claim 9, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the organic electroluminescent device further comprises a transparent film (note column 9, lines 10-14, "exhibit light transmissivity", and figure 1, items 2), and wherein the front reflecting portion comprises (note figure 1, items 1-3) an interface between either one of the electrodes (note figure 1, item 3) and the

transparent film (note column 9, lines 10-14, "exhibit light transmissivity", and figure 1, items 2) of the organic electroluminescent device.

Regarding claim 10, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the front reflecting portion (note figure 1, items 1-3) comprises air (between viewer and substrate is air) and a transparent of semi-transparent film (note figure 1, item 2).

Regarding claim 11, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the rear reflecting portion (note figure1, item 5-7) comprises either one of the electrodes (note figure 1, item 5).

Regarding claim 12, Shimoda discloses the organic electroluminescent display as claimed in claim 1, wherein the rear reflecting portion (note figure1, item 5-7) comprises a plurality of reflective, transparent of semi-transparent films (note column 6, lines 61-67, and figure 1, items 5-7).

Regarding claim 13, Shimoda discloses the organic electroluminescent display as claimed in claim 12, wherein at least one of the films comprises either one of the electrodes (note figure 1, item 5).

Regarding claim 14, Shimoda discloses an organic electroluminescent display equipped with an organic electroluminescent device having a laminated optical structure with low reflectance and transmittance (note column 6, lines 61-67, and figure 1), wherein the organic electroluminescent device comprises: a substrate (note figure 1, item 1); a first semi-transparent film (note figure 1, items 2-3); a second semi-transparent film (note figure 1, item 4); and a reflective film (note figure 1, items 5-7), and wherein the first semi-transparent film (note figure 1, items 2-3), the second semi-transparent film (note figure 1, item 4) and the reflective film (note figure 1, items 5-7) are laminated on the substrate in this order or an order opposite thereto (note figure 1).

Regarding claim 15, Shimoda discloses the organic electroluminescent display as claimed in claim 14, wherein the first semi-transparent film (note figure 1, items 2-3)

and the reflective film (note figure 1, items 5-7) comprises an electrode (note figure 1, item 3 and 5), respectively, and wherein the second semi-transparent film (note figure 1, item 4) comprises a light emitting layer made of an organic material.

7. Claim 16 rejected under 35 U.S.C. 102(e) as being anticipated by Yamada (US 2002/0190639).

Regarding claim 16, Yamada discloses an organic electroluminescent display comprising: a laminated optical structure with low reflectance and transmittance (note figure 2); and an organic electroluminescent device, wherein the organic electroluminescent device comprises: an organic electroluminescent layer (note figure 2, item 20) having a light emitting layer (note figure 2, item 18) made of an organic material and a transporting layer (note figure 2, item 16) configured to transport charges to the light emitting layer (note figure 2, item 18), and two electrodes (note figure 2, items 12 and 22) configured to sandwich the organic electroluminescent layer (note figure 2), wherein the laminated optical structure comprises at least two layers (note

figure 2), and wherein the laminated optical structure comprises the transporting layer (note figure 2, item 16).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Regarding claims 2-5, Duggal (US 2001/0033135) discloses that the refractive index of ITO is between 1.8 and 2.05, Durnell-Jones (US 2001/0010367) discloses the refractive index of aluminum oxide is 1.57, Lim (US 2004/0056590) discloses the refractive index of organic EL layer is around 1.7, Satake (US 6,707,521) discloses the refractive index of Al-Ti is 0.961.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bumsuk Won whose telephone number is 571-272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner' s supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JOSEPH WILLIAMS
PRIMARY EXAMINER

Bumsuk Won
Patent Examiner